REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested.

Claims 2-48 stand rejected under 35 USC 112, first paragraph, as allegedly not being fully supported by the originally filed specification. The rejection alleges that the specification is limited to crystallization of silicon with a catalyst material. However, this rejection is respectfully traversed. In fact, the applicants believe that one of the important patentable features of this specification is that a semiconductor film comprising silicon over a substrate may be irradiated using linear infrared light. An upper auxiliary linear infrared light and an upper main linear infrared light may be located over the substrate. A lower auxiliary linear infrared light and a lower main linear infrared light may be located under the substrate.

Because of the above, it is respectfully suggested that the present invention is not limited to crystallization of silicon using a catalyst. Note also, however, that the specification specifically teaches that crystal growth in a direction parallel with the amorphous film can be facilitated by moving the

example, see page 4 line 25 - page 5 lines 1-6). Moreover, the specification teaches irradiation with an infrared light to activate a dopant on page 14 lines 4-6. This clearly shows that the specification is not limited to a catalyst as alleged by the official action, and therefore, it is respectfully suggested that these rejections are incorrect.

Claims 2-45 stand rejected under 35 USC 103(a) as allegedly being unpatentable over Nakajima in view of Hirano, Sommer and Gill. The claims have been amended to obviate this rejection. Specifically, Sommer and Gill have been cited to show multiple components used to heat the wafer uniformly. However, Sommer and Gill do not teach that the semiconductor film is irradiated by scanning with first and second pairs of linear infrared light, as claimed. Accordingly, and for these reasons, it is respectfully suggested that there is no motivation to combine Nakajima, Hirano, Sommer and Gill. Moreover, the hypothetical combination of references, even if made, do not teach two main linear infrared light and two auxiliary linear infrared light in a predetermined direction so as to form and move a temperature gradient in the semiconductor; nor does it teach that the semiconductor film is irradiated using the auxiliary light prior to the main light. Therefore, and for these reasons, it is

Attorney's Docket No.:07977-226002

In view of the above amendments and remarks, therefore, all of the claims should be in condition for allowance. A formal notice to that effect is respectfully solicited.

Please apply $110.00 for a one month extension and any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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Attached is the marked-up version of the claims.

Marked-up version of the claims

In the claims:

Please amend the claims as follows:

2. (Amended) A method for manufacturing a semiconductor device comprising [steps of]:

forming a semiconductor film comprising silicon over a substrate; and

irradiating said semiconductor film by scanning with at least first and second pairs of linear infrared lights in a predetermined direction, [intensities]peak of a temperature of the second pair of linear infrared lights are [larger]higher than [that]peak of a temperature of the first pair of linear infrared lights,

wherein upper lights of the first and second pairs of said linear infrared lights are located over said substrate and lower lights of the first and second pairs of said linear infrared lights are located at a backside of said substrate.

8. (Amended) A method for manufacturing semiconductor device comprising [the steps of]:

forming a semiconductor film over a substrate; and

two auxiliary linear infrared lights in a predetermined direction so as to form and move a temperature gradient in the semiconductor film,

wherein an upper light of the auxiliary linear infrared lights and an upper light of the main linear infrared lights are located over said semiconductor film and a lower light of the auxiliary linear infrared lights and a lower light of the main linear infrared lights are located at an underside of said semiconductor film.

14. (Amended) A method for manufacturing a semiconductor device comprising [steps of]:

forming a semiconductor film comprising silicon over a substrate; and

irradiating said semiconductor film with at least a pair of main linear infrared lights and a pair of auxiliary linear infrared lights while moving said substrate in a direction perpendicular to the linear infrared lights, wherein an upper light of the auxiliary linear infrared lights and an upper light of the main linear infrared lights is located over said substrate and a lower light of the auxiliary linear infrared lights and a lower light of the main linear infrared

wherein said semiconductor film is irradiated with said auxiliary lights prior to said main linear infrared lights.

20. (Amended) A method for manufacturing semiconductor device comprising [the steps of]:

forming an amorphous semiconductor film comprising silicon over a substrate; and

crystallizing the semiconductor film by scanning with at least first and second upper linear infrared lights and first and second lower linear infrared lights in a predetermined direction, [intensities] peak of a temperature of the second upper and lower linear infrared lights are [larger]higher than [that]peak of a temperature of the first upper and lower linear infrared lights, wherein said first and second upper linear infrared lights are located over said substrate and said first and second lower linear infrared lights are located wherein at a backside of said substrate, and

wherein said predetermined direction is coincident with a direction of crystal growth in the semiconductor film.

29. (Amended)A method for manufacturing semiconductor device comprising [the steps of]:

crystallizing the semiconductor film by scanning the semiconductor film with at least a pair of first upper and first lower linear infrared lights and a pair of second upper and second lower linear infrared lights in a direction in order to form and move a temperature gradient the semiconductor film,

wherein said upper I near infrared light are located over said semiconductor film and said at least two lower linear infrared light are located at an underside of said semiconductor film, and

wherein said direction is coincident with a direction of crystal growth to be proceeded in the semiconductor film.

30. (Amended) A method according to claim 29, wherein [intensities] peak of a temperature of the first upper and first lower linear infrared lights are [smaller] lower than [that]peak of a temperature of second upper and second lower linear infrared lights.

36. (Amended)A method for manufacturing a semiconductor device comprising [steps of]:

forming an amorphous semiconductor film comprising silicon over a substrate; and

lights and a pair of auxiliary linear infrared lights while moving said substrate in a perpendicular to the linear infrared lights, peak of a temperature of the pair of main linear infrared lights are higher than peak of a temperature of the pair of auxiliary linear infrared lights,

wherein one of said main linear infrared lights and one of the auxiliary linear infrared lights are located over said substrate and the other one of said main linear infrared lights and the other one of the auxiliary linear infrared lights are located at a backside of said substrate, [and]

wherein an irradiating direction is coincident with a direction of crystal growth to be proceeded in the semiconductor film, and

wherein said semiconductor film is irradiated with said auxiliary lights prior to said main linear infrared lights.

41. (Amended)A method for manufacturing a semiconductor device comprising [steps of]:

forming an amorphous semiconductor film comprising silicon over a substrate; and

crystallizing said semiconductor film by scanning with first and second pairs of linear infrared lights in a direction

lights consisting of an upper light and a lower light,

wherein upper lights of the first and second pairs of linear infrared lights are located over said substrate and lower lights of the first and second pairs of linear infrared lights are located at a backside of said substrate, and

wherein said semiconductor film is irradiated with the first upper and lower lights prior to second upper and lower linear infrared lights.